

#### ABSTRACT OF THE INVENTION

A gas delivery system, having a gas identification, by which a gas supplied to the gas delivery system is identified, a blender, blending oxygen and the gas to provide a gas mixture with an oxygen flow rate set up by an operator, and at least one flow sensor, to measure a flow rate of the gas mixture. The blender is driven by an actuator motor to various blender positions with the blender positions being calibrated based on the specific heat ratio and the gas constant of the gas. The flow sensor can be installed at the inspiratory circuit, the proximal circuit and the expiratory circuit of the gas delivery system. The flow sensor output is corrected based on the actual conditions, including the temperature, pressure and humidity, and characteristics of the gas mixture.